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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,216	08/01/2005	Johan Hendrik Klootwijk	NL03 0089 US	9481

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PHILIPS ELECTRONICS NORTH AMERICA CORPORATION  
INTELLECTUAL PROPERTY & STANDARDS  
1109 MCKAY DRIVE, M/S-41SJ  
SAN JOSE, CA 95131

EXAMINER
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CRANE, SARA W

ART UNIT	PAPER NUMBER
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2811

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/544,216	Applicant(s) KLOOTWIJK, JOHAN HENDRIK	
	Examiner Sara W. Crane	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Claim Rejections - 35 USC § 112***

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of the independent claims, third or fourth lines from the end, the "thickness of the first part of the trench groove" is not clear. The phrase goes on to state, "the thickness of the first part of the trench groove is larger than the thickness in a second part of the trench groove." What thicknesses are being compared here? The thickness of the trench? Or the thicknesses of something *in* the trench? (the insulating material, perhaps? or the filler?) It doesn't make sense to compare the thickness "of the first part of the trench groove" to the thickness "in a second part of the trench groove. If the "thickness" referenced is, perhaps, the width of the trench, then one should compare "thickness" at one point, to "thickness" at another point. If the thickness referenced is of something "in" the trench, then one should compare "thickness" at one point "in" the trench to "thickness" at another point "in" the trench.

Also, in claim 6, the claim states at line 8 that the trench groove is filled ("filling the trench groove at least with a first insulating material and with a first filler material"). But then the phrase states, "wherein the first filler material at least partially fills a remaining part of the trench groove." So is the groove filled, or merely partially filled? It can't be both.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, insofar as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al.

With respect to claim 1, figure 2 of the reference shows a trench structure adjacent a slab of semiconducting material 11A having buried layer 18 extending parallel to the top and bottom surfaces of the slab. A trench groove is under 12, which extends through the buried layer. The top part of the groove has an insulating material at 14, and is filled with materials 15 and 16. The part of the thicker insulator immediately adjacent to layer 18 would be "a first part of the trench groove surrounded by the buried layer" which has thickness larger than the underlying insulator thickness. It would have been obvious that the trench provides an isolation function, because current will not flow through the insulating trench sidewall material.

With respect to claim 2, the insulator at 14 has no insulator at all above it, so its thickness is greater than "the thickness" of the insulator above, because anything is larger than zero. (Note that "the thickness" in lines 2-3 of this claim has no antecedent.) With respect to claim 3, "the first part" is read on the part that meets the claim limitation. With respect to claim 4, the buried layer has a vertical edge that is substantially in line with the vertical structures of the trench. With respect to claim 5, a transistor is shown.

Art Unit: 2811

With respect to claim 6, again, the thicknesses are not clear, but the discussion of claim 1 would hold true here as well.

### ***Conclusion***

Applicant remarks that figure 1 has been amended to overcome the claim rejections made under 35 U.S.C. 112, second paragraph. Examiner cannot see anything in the new figure 1 that would clarify the problems identified above. One still cannot determine what thicknesses are being compared, in the claim language "the thickness *of* the first part of the trench groove is larger than the thickness *in* the second part of the trench groove." Thickness of? Thickness in? What is "in" the second part of the trench groove? Also, one still cannot determine whether claim 6 requires filling or partial filling of the groove. Applicant argues further with respect to the art rejection that one skilled in the art would not "select Sugiura in that he does not suggest or teach Applicant's invention." It was the examiner that selected the reference, and the precise application of the reference was set forth at length in the rejection. Applicant notes further that figure 2 of the reference is a "sectional view showing the dynamic memory cell." Nothing in the rejected claims prohibits reading the claim language on a dynamic memory cell. As noted in the rejection, current will not flow through the insulating trench sidewall material, so that an isolation function is possessed by the structure.

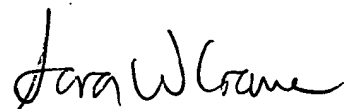
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (571) 272-1652.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sara W. Crane  
Primary Examiner  
Art Unit 2811